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Employment transitions in the Netherlands, 1980–2004: Are low educated men subject to structural or cyclical crowding out?

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Abstract

This article addresses whether low educated men are displaced from their jobs by higher educated workers in the Netherlands in the period 1980–2004. In particular, we test whether structural or cyclical crowding out is predominant in the Dutch labor market. In order to do so, we try to explain the observed trends in education-specific transition rates to entry into first employment from education, exit from employment into unemployment or inactivity, and re-entry into employment from unemployment or inactivity for men by both business cycle effects (that is, changes in aggregate unemployment rates) and structural effects (that is, changes in labor supply–demand ratios for high educated). Discrete-time event history models are estimated using the OSA Labor Supply Panel 1985–2004. Retrospective information enables to study trends from 1980 onwards, so that structural effects can be distinguished from cyclical effects. The results show that structural crowding out exists at both the worker in- and outflow. First of all, it was observed that a growth in the oversupply of high educated increases the employment exit risk of low educated workers more so than that of higher educated ones. In addition, it was shown that an increase in the oversupply of high educated especially reduces the re-employment chances of low educated unemployed men. There is no evidence found for cyclical crowding out among low educated workers in the Dutch labor market.

Keywords: Educational inequality; Employment transitions; Crowding out; Structural trends; Cyclical trends; Panel data; Retrospective information; Discrete-time event history analysis

1. Introduction

The employment opportunities of low educated individuals in the Netherlands have been a great concern (again) among both researchers and policy makers in the last few years (see for instance de Beer, 2006; Wolbers, 2000; Gesthuizen, 2008). In general, it is found that the position of low educated workers in the Dutch labor market has worsened considerably during the last 25 years. In the existing literature, there are various explanations suggested for this deterioration. One explanation is that technological change, in particular computerization, has led to a demand shift from low-skilled to high-skilled labor ('skill biased technological change'), reducing the job opportunities of the lower educated (Levy & Murnane, 1992; Krueger, 1993). Although it is undisputable that a skills upgrading of the occupational structure has taken place in the Netherlands, the share of

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elementary occupations in the total labor force has been surprisingly constant, or even has slightly increased since the 1970s (de Beer, 2006; Salverda, van Klaveren, & van der Meer, 2008). The transformation from an industrial economy to a service economy has made a lot of unskilled labor in traditional industries, such as manufacturing, superfluous in the Netherlands, but at the same time, it has introduced many low-skilled service jobs (mainly in the catering and cleaning sector), for reasons of outsourcing (de Beer, 2006; see also Sassen, 1991). Therefore, it is unlikely that skill biased technological change is the driving force behind the worsened employment opportunities of low educated individuals in the Netherlands.[2]

Another explanation refers to 'crowding out', the process by which higher skilled workers increasingly occupy low-skilled jobs that were originally held by low-skilled workers. The ultimate consequence of this process of bumping down is that individuals at the lowest end of the labor market run a disproportionately higher risk of becoming (and staying) non-employed (that is, unemployed or inactive). So, even if the share of low-skilled jobs does not decrease over time, the employment opportunities of the lowest educated may deteriorate. For the Netherlands, there are two arguments that support this explanatory viewpoint. First of all, the increase in the average skill level of the Dutch labor force is relatively slow compared to the increase in the average educational level. By indexing both trends (1977 = 100), Batenburg and de Witte (2001) found an average skill level of occupations of 113 in 1995, compared to a mean educational level of employees of 134 in that year. In particular, the share of tertiary educated in the active labor force grew considerable during this period: it rose from 12 to 26%. This widening gap has worsened the efficiency of the allocation process in the Dutch labor market. Second, and related to the former point, is the increasing share of overqualified workers in low-skilled jobs. In the beginning of the 1970s, almost all low-skilled jobs in the Netherlands were possessed by low educated workers, whereas in the mid 1990s, around 40% of these jobs were held by workers with an intermediate or even higher qualification level (Asselberghs, Batenburg, Huijgen, & de Witte, 1998; de Beer, 2006). It is likely that this percentage has further increased recently.[3]

The majority of sociological studies on crowding out focus on long-term trends in the labor market returns to educational credentials (see among others Wolbers, de Graaf, & Ultee, 2001; Åberg, 2003; Wanner, 2005). This research relies on the job competition model, which provides an entirely structural explanation for the decreasing returns to education. If the upgrading of occupations cannot compensate the educational expansion, the higher educated who no longer have access to the best positions, will try to find a job further down the job queue, and replacing the lower-skilled to ever lower-skilled jobs, even pushing them out of the labor market. In the economic literature, however, most studies on crowding out concentrate on its effects in the context of the business cycle (Teulings & Koopmanschap, 1989; van Ours & Ridder, 1995; Gautier, van den Berg, van Ours, & Ridder, 2002). There seems to be a general consensus that the employment opportunities of lower educated individuals are particularly vulnerable under adverse economic circumstances, but that the distance with the higher educated decreases to its prior level when the economy peaks again. The rationale behind this is that high-skilled workers only temporarily accept a lower-skilled job (instead of staying unemployed) and continue searching for a better fitting one. As soon as high-skilled workers find a suitable job, they do not longer displace the lower educated from their jobs, improving the labor market opportunities of the latter.

This article addresses whether low educated men are displaced from their jobs by higher educated workers in the Netherlands in the period 1980–2004. For that purpose, we compare education-specific transition rates to entry into first employment from education, exit from employment into unemployment or inactivity, and re-entry into employment from unemployment or inactivity. We focus on men only, as trends in education-specific

[2] Also in the U.S. context, the skill biased technological change explanation has been nuanced recently. Whereas it is clear that the labor demand shifts of the 1980s appeared to have been monotonically rising in skill, over the last 15 years, patterns of employment growth in the U.S. have favored low and high skilled workers relative to intermediate skilled workers (Autor et al., 2006). This is what Goos and Manning (2007) term job polarization.

[3] Wielers and Glebbeek (1995) argue that the rising share of overqualified workers in low-skilled jobs in the Netherlands does not per se reflect increasing skill underutilization. They provide two additional explanations for this trend. First, it may be that with the upgrading of skill requirements in the Dutch labor force, the task content of jobs has risen, requiring higher educated for the same jobs than used to be case before (see Spitz-Oener, 2006 for a similar argumentation for the German labor market). Second, there is evidence that overqualified workers in the Netherlands realise higher labor productivity (that is, higher earnings) in the same jobs than adequately educated ones (Hartog & Oosterbeek, 1988). It is possible that all three mechanisms are at work, but it is difficult to discriminate between these, because their central concepts (such as labor productivity) are hard to measure adequately.

employment transitions among women are difficult to interpret unambiguously as crowding out, given the fact that so many other structural factors affected their employment patterns (such as the general increase in female labor participation and, related to that, the emergence of part-time employment). Discrete-time event history models (based on person-month data) are estimated using the OSA Labor Supply Panel 1985–2004. Retrospective information enables to study trends from 1980 onwards, so that structural effects can be singled out adequately. We test which of the two mechanisms (structural or cyclical crowding out) is predominant in the Dutch labor market. In order to do so, we try to explain the observed trends in education-specific employment rates for men by including time-varying measures referring to both business cycle effects (that is, changes in aggregate unemployment rates) and structural effects (that is, changes in labor supply–demand ratios for high educated).

The present contribution advances on earlier research dealing with crowding out in at least three ways. First, this article brings together sociological and economical approaches to study crowding out in the labor market. This enables to test whether structural crowding out (that has been the main focus of sociologists dealing with this topic) or cyclical crowding out (on which labor economists have been concentrating) is predominant in the Dutch context. Second, we use a panel dataset that enables to analyze employment dynamics. Unemployment rates, for instance, provide little insight into the dynamic nature of unemployment. There may be great changes at the individual level without the unemployment rate having changed at all. For example, a high and stable unemployment rate among the lower educated may be accompanied by a high level of mobility between employment and unemployment within this group. So, by analyzing employment transitions we gain more insight in whether crowding out mainly occurs at the worker inflow or at the worker outflow. In the first situation, a (structural and/or cyclical) deterioration of the labor market situation should lower the entry probabilities of the lower educated more so than those of the higher educated. In the latter case, a worsening of the labor market situation should increase the non-employment risk of the lower educated more so than that risk of the higher educated. Third, we look at other forms of non-employment than unemployment only. Not participating in the labor market (instead of being unemployed and searching for a job) is for many individuals a serious option, particularly in times of high unemployment. Especially for low educated men, the then existing disability scheme (WAO) has been used thoroughly in the Netherlands in the 1980s as a social safety net for those who were forced to leave their jobs during the economic recession of that period. If transitions between employment and inactivity are ignored, then the amount of crowding out among low educated individuals is probably underestimated, as transitions between employment and unemployment do not present a comprehensive picture of this process in the Dutch labor market.

2. Theoretical background

In social stratification research, modernization theory is widely used (Blau & Duncan, 1967; Treiman, 1970). This theory states that modern societies are characterized by efficient allocation and selection processes in the labor market that no longer take place on the basis of *ascribed* characteristics such as social class background. Instead, occupational status attainment is increasingly based on merit or *achieved* properties, in particular (occupation-specific) knowledge and skills. Education is, therefore, considered as the single most important characteristic in the selection and allocation process in modern labor markets. Empirical evidence for a trend from ascription to achievement in the Netherlands is found in de Graaf and Luijkx (1992).

It is claimed that the trend from ascription to achievement is caused by technological developments in modern labor markets, which have led to a demand shift from a low-skilled to a high-skilled labor force (Kerr, Dunlop, Harbison, & Myers, 1960; Bell, 1974). In labor economics, this process of skills upgrading is known under the heading of 'skill biased technological change' (Levy & Murnane, 1992; Krueger, 1993). In particular, the introduction of automation and computerization in post-industrial or 'knowledge' societies has resulted in a changing occupational structure, and more important, in changing educational requirements on the labor market. One the one hand, various low-skilled occupations disappeared, due to the fact that for quite a lot of simple, unqualified work existing manpower was replaced by machinery and computer technology. One the other hand, new high-skilled occupations, in particular in the information technology sector, emerged. Also, the educational requirements of existing occupations have increased. Think, for instance, of the tasks of a secretary, who used to work with a typewriter, but who nowadays needs to deal with a computer (not only with the keyboard to typewrite, but also with the software to operate it). All in all, technological developments in the labor market have resulted in reduced job opportunities of the

lower educated and, therefore, in a deterioration of their labor market position.[4]

In addition to economic modernization, cultural modernization took place in the form of a shift in the dominant value patterns. In modern societies, particularistic value patterns, which were predominant in pre-industrial societies, have been replaced by universalistic ones. Also values with respect to occupational status attainment have changed (Blau, 1962). Nowadays, individuals do not accept any longer that individuals are judged on the basis of their social class background, but they believe that social positions should be distributed based on achievement and merit. Moreover, modern societies have become bureaucratic. The rise of organizations has enlarged the possibilities of control and formal procedures of recruitment (Weber, 1922). For that reason, processes of selection and allocation in the labor market are more likely to follow universalistic criteria.

To understand the micro-level mechanism that explains the relationship between economic (and cultural) modernization on the one hand and the trend from ascription to achievement on the other, human capital theory is very useful. According to this theory, the skills acquired in education represent human capital (Becker, 1964). Investments in human capital are useful, as long as they lead to higher productivity on the labor market. Employers value labor productivity by offering the best labor market positions (and wages) to those individuals who have obtained most human capital. So, when technological developments lead to a growing demand for high-skilled labor, employers increasingly select on and individuals increasingly invest in educational credentials. As a consequence, modernization has resulted in a rapid increase in educational attainment in advanced societies. In addition, institutional reforms aimed at making educational systems more meritocratic are important here. In particular, the decreasing (direct and indirect) costs of education, leading to a more equal distribution of parental resources, and the increasing age of compulsory education have triggered educational expansion.

The question, then, is whether the increasing demand for high-skilled labor can keep pace with the educational expansion (Berg, 1971; Livingstone, 1998). If the skills upgrading of jobs cannot compensate the educational expansion, then the labor market returns to educational credentials are likely to decrease ('credential inflation') (Wolbers et al., 2001). The credentials of successive cohorts of labor market entrants have steadily improved, constantly qualifying them for jobs at higher levels, but the labor market has been unable to meet this large supply. Therefore, it can be expected that increasing numbers of highly skilled workers accept jobs at a lower level than they actually obtained, thereby replacing the less well educated in ever lower-skilled jobs, even pushing them out of employment. This process of bumping down is generally referred to as 'crowding out' (Borghans & de Grip, 2000).

Crowding out is compatible with job competition theory (Thurow, 1975). According to this theory, employers seek to employ the best available candidate for their vacancies, at the lowest training costs. They use educational qualifications as indicators of trainability (Spence, 1974). Thus, job seekers are ranked in an imaginary queue according to their expected training costs, and employers match this queue of applicants to a queue of vacant jobs that are classified on the basis of their level. The best positions go to those with the lowest training costs (that is, the highest qualifications), and education is regarded as a positional good (Hirsch, 1977; Ultee, 1980). It is assumed that when there is a discrepancy between skills upgrading and educational expansion, that is, when there is an oversupply of high-skilled workers, then at least a number of the higher educated, who no longer have access to the best positions, will try to find a job further down the job queue. Higher educated workers will then suddenly find themselves competing with lower-educated workers, who originally had these jobs. This job competition often ends in success for the higher educated. After all, they have superior qualifications. The ultimate effect of this process of crowding out is that the individuals at the lower end of the job queue run the greatest risk of becoming non-employed (that is, unemployed or inactive).

This suggests that crowding out can act as an alternative explanation of the worsened labor market position of the lower educated. It is not only the demand shift from low-skilled to high-skilled labor that has deteriorated the labor market position of the lower educated, but also their employment opportunities are reduced because they are more and more displaced from the jobs they originally held by higher educated workers. In other words: the problem is not that there are too few low-skilled jobs, but, in fact, that there are simply too few high-skilled jobs, given the huge educational expansion that has taken place. The oversupply of highly educated indi-

[4] In addition to technological change, globalization and increasing foreign trade shifted the demand from low-skilled to high-skilled labor (Wood, 1994). The North-South trade led to a movement of cheap low-skilled labor towards low wage countries. Highly developed economies, subsequently, specialized in medium or high-tech industries, contributing to the upgrading of the skill level demanded in these labor markets and, as a consequence, reducing the employment opportunities of the least qualified.

viduals causes many of them to accept a job below their actual level of education obtained, thereby reducing the employment opportunities of the least qualified.[5]

The next issue, then, is whether the nature of crowding out is only structural, as job competition theory postulates, or that crowding out can also be related to cyclical fluctuations in the labor market (Pollmann-Schult, 2005). Most sociological research dealing with crowding out adopts the structural explanation of job competition theory and focuses on long-term developments in the occupational returns to educational credentials (see van der Ploeg, 1994; Wolbers & de Graaf, 1996; Batenburg & de Witte, 2001; Wolbers et al., 2001 for the Netherlands; Åberg, 2003 for Sweden; Wanner, 2000, 2005 for Canada). The general conclusion of these studies is that the returns to credentials decreased over time due to the fact that the skills upgrading of jobs could not compensate the enormous educational expansion that took place simultaneously. Therefore, the authors of these studies conclude that there is persistent educational overinvestment and crowding out with a structural cause.

Among labor economists, however, this conclusion is strongly contested (Burris, 2005). They argue that the static view sociologists have about the labor market does not render justice to its supposed dynamics. They claim that the labor market is flexible enough to adjust (wages) to temporal unbalances between labor supply and demand, although not completely as is predicted by human capital theory (due to minimum wage regulations). Instead, they often refer to job matching theory (Sattinger, 1993), that can be considered as a combination of human capital and job competition theory. Job matching theory states that the quality of a job match, that is, the degree of fit between required and acquired educational qualifications, determines the productivity level and earnings in a job. If a worker is overqualified, then his or her acquired skills are underutilized. This imposes a limitation on an individual's labor productivity, resulting in lower wages. And indeed, empirical evidence suggests that individuals working in a job for which a lower level of education is required than actually obtained (that is, overeducated workers) earn less than equally educated individuals with fitting employment, but more than individuals working in the same job with the level of education actually required (Hartog, 2000). So, overeducation has a positive return in the labor market, but a lower one than required education.

Especially in times of an economic downturn, highly educated workers lower their reservation wage and accept a job for which they are overqualified rather than remain unemployed. It is true that this results in crowding out and a disproportionate high level of unemployment and inactivity among the least qualified, but, according to job search theory (Jovanovic, 1979), overqualified workers change these jobs for a better fitting one as soon as the economic climate flourishes again. Empirical evidence supports this view. First of all, job mismatches such as overeducation are an important cause of job dissatisfaction (Burris, 1983; Vaisey, 2006), which provides an incentive for individuals to change jobs hopefully leading to a job that better matches their knowledge and skills (Wolbers, 2003; Gesthuizen & Dagevos, 2008). In addition, dynamics in overeducation are high: only a small percentage of workers is long-term overqualified and job-to-job mobility seems to act as a way out of overeducation (Groot & Maassen van den Brink, 2003; see also Sicherman, 1991). In other words: overeducation is just a temporary phenomenon, particularly occurring in times of high unemployment, and crowding out of the least qualified, therefore, should only be cyclical. The limited numbers of studies that address cyclical crowding out, however, are rather mixed in their results. Teulings and Koopmanschap (1989) and van Ours and Ridder (1995) found (some) support for the cyclical crowding out hypothesis in the Netherlands, whereas Gautier et al. (2002) did not find processes of cyclical crowding out in the Dutch labor market. Pollmann-Schult (2005), finally, found evidence for cyclical crowding out in the West German labor market, but only at the worker inflow.

3. Data and measurement of variables

To test which of the two mechanisms (structural or cyclical crowding out) is predominant in the Dutch labor market, we use the OSA Labor Supply Panel 1985–2004 (Fouarge et al., 2006). The first wave was held in 1985, the second in 1986, while thereafter information was gathered bi-annually. Per wave, 4000 active or inactive members of the labor population are interviewed. In between waves, the panel looses more or less one third

[5] A third, and very recent, explanation of the deteriorated labor market position of the low educated is stigmatization by negative selection (Solga, 2002; see also Gesthuizen et al., 2010). Educational expansion has not only reduced the size of the group of low educated persons, but also the quality of the low educated group. As a result of educational expansion, the low educated group is negatively selected in terms of social composition and ability. It is mainly individuals from the lowest social class backgrounds and those with the least cognitive ability and motivation who have remained in the lowest educational group. For the Netherlands, it has been shown that these negative selection processes indeed occurred (Gesthuizen & Kraaykamp, 2002; Gesthuizen et al., 2005). These 'left-overs' are subsequently stigmatized by employers in the labor market and, consequently, excluded from employment.

of the respondents. Including new panel members who together form a representative reflection of the population in that year, repairs this attrition.

In addition to questions on current labor market participation, retrospective information was gathered with regard to labor market transitions *in between* two waves. The first wave contains retrospective questions for the 5 years prior to the interview. Consequently, we are able to study trends in transition rates from 1980 until 2004, so that structural and cyclical effects can be singled out adequately. For each wave, we computed a person-month file based on the respondent's labor market situation in each specific month, after which we combined these files into one large person-month dataset. As educational attainment is asked in each wave, it could be included as a time-varying covariate.

Since so many other factors than crowding out influence female employment patterns, we excluded women from the empirical analysis. We also excluded males older than 54. The latter age boundary has been chosen to exclude the transition to early retirement, which is a permanent exit route that was used up until recently for higher educated civil servants, particularly in times of high unemployment. And finally, we excluded students, men in military service and self-employed from the risk set. In sum, for 16–54-year-old male employees we compare education-specific transition rates to entry into first employment from education (540 events, 4992 person-months), exit from employment into unemployment (744 events, 426,807 person-months) or inactivity (204 events, 426,807 person-months), and re-entry into employment from unemployment (490 events, 10,152 person-months) or inactivity (49 events, 7228 person-months), using discrete-time event history models.

For each month in a respondent's career we know whether he worked and, if not, whether he was searching for a job or not. Given that a respondent has left school, the transition from education to first employment can be observed. By means of logistic discrete-time event history analysis, we estimate the conditional likelihood of entering first employment after school-leaving. Once employed, two transitions to non-employment can be experienced. The first is to having no job, but searching for another. This is the transition to unemployment. The second is to having no job and not searching, that is, to inactivity. Given the trichotome nature of the dependent variable (unemployed, inactive, employed), we estimate discrete-time competing risk event history models by means of multinomial logistic regression analysis. After a period of non-employment for those, who had a job before, two transitions to re-employment can be made. One refers to the transition from unemployment to re-employment; the other from inactivity to re-employment. For these transitions, we estimate logistic discrete-time event history models.

Our indicator for structural changes refers to year to year changes in the oversupply of high educated. The oversupply is measured by dividing the percentage of tertiary educated individuals in a given year by the percentage of high level employment in that year. The higher this ratio is, the higher the supply of higher educated individuals as compared to the demand for high-skilled jobs. The oversupply in 1 year compared to the oversupply in the previous year is done by division. We measure cyclical alterations by month to month changes in the unemployment rate. Also here, the change scores are obtained by means of division. Both measures thus are growth rates.[6] The underlying figures are based on information from Statistics Netherlands (CBS, 2009). The respondent's highest attained educational level is measured time-varyingly, using the CASMIN educational classification scheme (Müller, Lüttinger, König, & Karle, 1989). We condensed the original scheme to four categories that refers to the most distinct educational levels existing in the Dutch educational system: primary education (1ab), lower secondary education (1c), higher secondary education (2abc) and tertiary education (3ab).[7] Duration is measured in four separate ways, depending on the transition to which it applies.

[6] It is questionable whether division (instead of subtraction) is a proper way of comparison. If the unemployment rate doubles from 1 to 2%, the effect of this doubling on, for instance, re-gaining employment may be smaller than a doubling from 2 to 4%. In both the cases, however, the same score to the unemployment change variable is assigned, whereas it is clear that the absolute increase in unemployment (obtained by subtraction) is larger in the second case than in the first one. For that reason, we also calculated change scores for our two measures by means of subtraction. The correlation between the two alternative calculations (based on division versus subtraction) is very high: 0.98 in the case of the yearly changes in oversupply and 0.90 in the case of the monthly changes in unemployment. So, it is very unlikely that the adopted manipulation of arithmetic (division versus subtraction) to measure change affects the empirical results. Given the fact that in labor market research in particular growth rates are employed (think, for instance, of the measurement of employment growth), we prefer division rather than subtraction to define change scores.

[7] The Dutch educational system contains more educational categories than the four being used, but these refer to tracks or fields of education within the four distinguished levels. Given the fact that our prime focus is on vertical job mismatches (that is, overeducation and its consequences in terms of crowding out) rather than horizontal ones (referring to discrepancies between the occupational domain one is working in and the field of education attended), there is no need to use these more detailed educational categories. Moreover, in previous Dutch research on crowding out (see among others Teulings & Koopmanschap, 1989; van Ours & Ridder, 1995; Wolbers et al., 2001) the same educational categories have been used, with sometimes an

Job search duration refers to the number of months between the moment of leaving education and finding first employment. Employment duration is the number of months the respondent was employed prior to the transition to non-employment. Unemployment duration pertains to the number of unemployed months prior to the transition to re-employment. Inactivity duration, finally, refers to the number of months in inactivity before re-entering employment. In all cases, the estimates are solely based on the information available in the dataset. Age, which approximates work experience, is the respondent's actual age in the particular month. We also include its quadratic term to account for curvilinear effects of work experience. With regard to the transition from education to first employment, the age variable is not included. A first reason is that, in general, school-leavers are without any (relevant) work experience. A second one is that age is strongly correlated with level of education, as higher educated school-leavers are, by definition, older than lower educated ones.

4. Results

We start the empirical part of this article by describing education-specific transition rates to entry into first employment from education, exit from employment into unemployment or inactivity, and re-entry into employment from unemployment or inactivity for men in the Netherlands for the period 1980–2004.[8] These transition rates refer to yearly averaged, predicted transition rates, based on discrete-time event history models in which period (measured as single year dummies), level of education and interaction terms between period and level of education are included as independent variables. In Figs. 1–5, the results of these models are presented.[9]

In Fig. 1, trends in the transition rates from education to first employment are presented. For all educational categories, the lowest transition rates can be found in the first half of the 1980s when unemployment levels were high in the Netherlands. The second half of that decade can be considered as a period of recovery: the likeli-

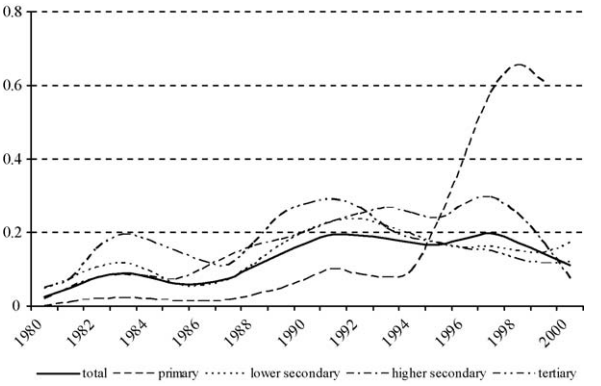

Fig. 1. Transition rates from education to first employment for men, 1980–2000.
Source: OSA Labor Supply Panel, 1985–2000 (being in education is underreported in 2002 and absent in 2004).

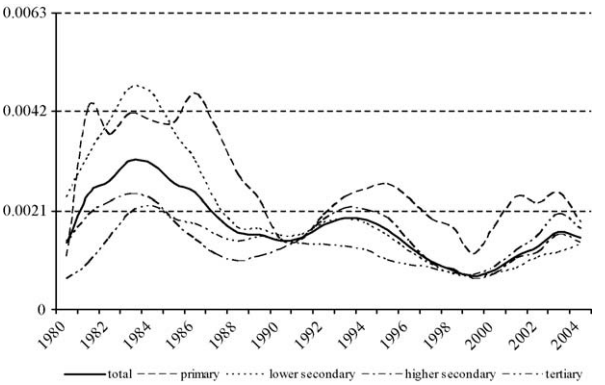

Fig. 2. Transition rates from employment to unemployment for men, 1980–2004.
Source: OSA Labor Supply Panel, 1985–2004.

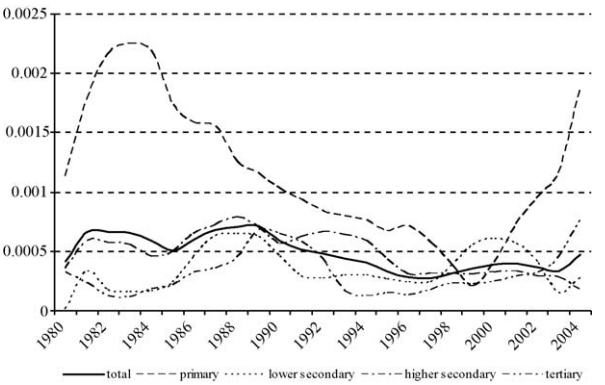

Fig. 3. Transition rates from employment to inactivity for men, 1980–2004.
Source: OSA Labor Supply Panel, 1985–2004.

additional distinction between lower (vocational colleges) and higher (university) tertiary education. Since the consequences of overeducation (measured here at the aggregate level as the oversupply of high educated in the labor market) in terms of crowding out are particularly felt among the least qualified, this differentiation within higher education is not so relevant.

[8] As being in education is underreported in 2002 and absent in 2004, the transition from education to first employment cannot (adequately) be defined for these years. Therefore, the results referring to this transition are limited to the period 1980–2000.

[9] Full model estimates can be obtained from the authors on request.

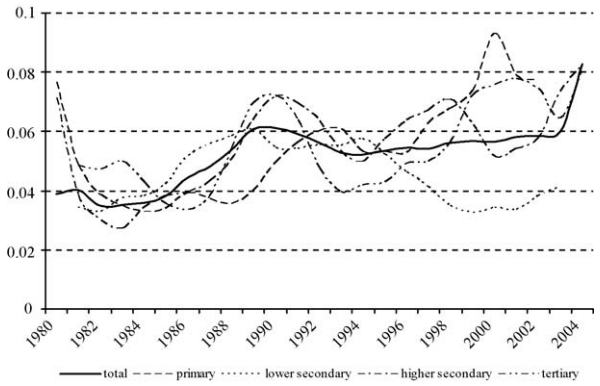

Fig. 4. Transition rates from unemployment to re-employment for men, 1980–2004.
Source: OSA Labor Supply Panel, 1985–2004.

hood of entering first employment after school-leaving grew (again) and reached its peak in the early 1990s. After that, the overall transition rates remained rather stable – with a small, temporary drop in 1995 – but since 1997 the transition rates started to decrease and in 2000 – the last year of observation – these tended to the level of the early 1980s. When comparing between levels of education, we find that higher educated school-leavers, in general, have better opportunities to enter first employment than lower educated ones. However, it is remarkable, that since the early 1990s, the transition rates to enter first employment are larger for higher secondary educated than tertiary educated. Nevertheless, these findings confirm results recently found elsewhere (Wolbers, 2008). In fact, they reflect the much stronger orientation towards occupation-specific skills acquisition in upper secondary vocational education (that forms the large majority of higher secondary education in the Netherlands) than in tertiary education. Moreover, the

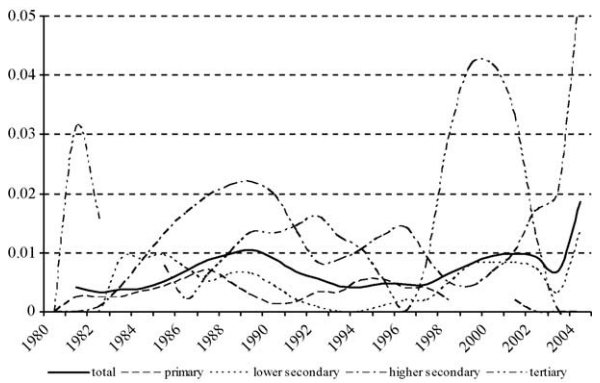

Fig. 5. Transition rates from inactivity to re-employment for men, 1980–2004.
Source: OSA Labor Supply Panel, 1985–2004.

effects must be interpreted as indicating higher reservation wages for graduates. They expect a job to meet certain standards (that is, a secure and matching job) and can afford to wait for a proper job offer.

Fig. 2 describes the transition rates from employment to unemployment for men between 1980 and 2004. By and large, the conditional likelihood of becoming unemployed follows the general trend in aggregate unemployment in the Netherlands for this period. The risk of becoming unemployed increased quickly in the beginning of the 1980s, having reached its peak in 1983. After that year, the transition rates into unemployment steadily decreased and reached its original level again in 1990. In the few years following, the chance of becoming unemployed rose again. Since 1994, the situation has improved greatly, and in 1999, the likelihood of becoming unemployment was lowest in the whole period of observation. At the turn of the millennium, however, employment prospects deteriorated again in the Netherlands, having resulted in an increase of the risk of becoming unemployed. This overall trend in the transition rates from employment to unemployment is found back at each level of education. However, two particular observations need to be mentioned here. First, the risk of becoming unemployed is higher for low educated male workers than for high educated ones. Second, the negative relationship between the conditional likelihood of becoming unemployed and level of education was strongest in the early 1980s, when aggregate unemployment was high.

The overall trend in the transition rates from employment into inactivity to a large extent displays a similar pattern as the abovementioned general development in the transition rates from employment to unemployment (see Fig. 3). The conditional likelihood of becoming inactive first increased in (the beginning of) the 1980s – although not that impressive as was the case with unemployment – and, subsequently strongly decreased, having resulted in the smallest chance of becoming inactive during the end of the 1990s, followed by an increase again since then. This overall trend, in fact, largely represents the situation for the lowest educated male workers. For them, we observe the same trend, but then in an excessive form. For higher educated men, in contrast, the transition rates from employment to inactivity are much lower and fluctuate without any trend.

Fig. 4 shows the transition rates from unemployment to re-employment. The general pattern indicates that for men the likelihood of re-gaining employment after a period of unemployment was low until the mid-1980s, followed by a strong increase in the probability of re-entry into employment in the second half of the 1980s.

This increase is undoubtedly related to the huge employment growth in the Netherlands that started in the second half of the 1980s. Between 1983 and 1997, the number of jobs increased at a rate of 1.8% per year, four times the EU average (OECD, 1998). This has resulted in rather stable transition rates from unemployment into re-employment during the 1990s – except the period around 1994 when the transition rates where a bit lower due to a small cyclical downturn in the Netherlands. Since 2002, the likelihood of leaving unemployment has increased considerably again. In addition, the results presented in Fig. 4 demonstrate that education-specific patterns over time in these transition rates are hard to identify: there is no indication that higher qualified unemployed have profited more from the employment growth that took place in the Netherlands since the second half of the 1980s than lower qualified ones.

In Fig. 5, the transition rates from inactivity to re-employment are presented. Broadly spoken, the overall trend in these transition rates follows the trend as described in Fig. 4: the likelihood of re-entering employment after an inactivity period was low until the mid-1980s, increased in the second half of the 1980s, decreased in the early 1990s, rose again in the second half of the 1990s, followed by a strong growth since 2003. When broken down in educational categories, the observed temporal pattern in transition rates is hard to find back at each educational level. The number of transitions from inactivity to re-employment is small (especially for tertiary educated men), making the results rather unstable.

The next step, then, is to explain the trends in the education-specific transition rates to entry into first employment from education, exit from employment into unemployment or inactivity, and re-entry into employment from unemployment or inactivity. For that purpose, we estimated a further set of discrete-time event history models. In these models, the period variable has been replaced by the two substantive measures indicating the theoretically assumed explanations of the observed period effect. The same holds for the interactions between period and level of education. As already described above, the year to year changes in the oversupply of high educated are employed to measure structural crowding out among the least qualified, while the month to month changes in the aggregate unemployment rates are used to determine cyclical crowding out among them. Moreover, we controlled for age (and its quadratic term) – as a proxy for work experience – and possible state dependence by including a measure of duration.

Table 1
Coefficients of discrete-time event history models of entry into first employment from education for men (logit effects).

	Transition from education into first employment			
	M1	M2	M3	M4
Intercept	−0.90**	−0.98**	−0.90**	−0.98**
Primary education	Ref.	Ref.	Ref.	Ref.
Lower secondary education	0.77**	0.93*	0.75**	0.94*
Higher secondary education	0.88**	1.14**	0.88**	1.12**
Tertiary education	0.69*	0.38	0.69**	0.38
Duration	−0.48**	−0.48**	−0.48**	−0.48**
Oversupply high educated (Δ)	−0.15**	−0.11	−0.15**	−0.11
Unemployment rate (Δ)	0.03~	0.04*	0.03	0.03
Oversupply high educated (Δ)*				
Lower secondary education		−0.10		−0.11
Higher secondary education		−0.13		−0.13
Tertiary education		0.16		0.16
Unemployment rate (Δ)*				
Lower secondary education			0.06	0.06
Higher secondary education			−0.01	−0.01
Tertiary education			−0.03	−0.04
Model chi^2	1207**	1216**	1211**	1220**
Df	6	9	9	12
#transitions from education into first employment	540	540	540	540
N	4992	4992	4992	4992

Source: OSA Labor Supply Panel, 1985–2000 (being in education is underreported in 2002 and absent in 2004).
~ $p<0.10$.
* $p<0.05$.
** $p<0.01$.

Table 1 describes which factors affect the probability of a transition from education to first employment among male school-leavers. The estimated parameters represent the change in the log odds of the conditional likelihood of entering first employment, caused by a one-unit increase in the associated covariate. Due to the small time-unit of one month all hazards analyzed are very low. For such low hazards, the hazard rate and the odds of the hazard rate have nearly the same value. Therefore, the effects of covariates on the odds of hazards are interpreted as effects on hazards.

Model 1 first of all shows that low educated school-leavers are less likely to enter first employment than higher educated ones. Once again, the employment opportunities for school-leavers from higher secondary education are better than those for tertiary education graduates. As suggested, this finding reflects the weaker emphasis on occupation-specific skills acquisition in tertiary education compared to upper secondary vocational education. Moreover, this result can be interpreted as indicating higher reservation wages for graduates. Second, job search duration has a negative effect on the likelihood of entering first employment. The longer the period since leaving education, the less likely it is to find first employment. Third, changes in the oversupply of high educated matter. The higher the growth in oversupply of high educated, the less likely it is for all school-leavers to enter first employment. Fourth, the unemployment growth rate has – surprisingly enough – a positive, albeit marginally significant effect on the likelihood of entering first employment.

The results obtained from Models 2, 3, and 4 indicate that there are no significant effects of the interaction terms between the two measures referring to crowding out and level of education. In other words: there is no evidence of structural and cyclical crowding out among low educated school-leavers when entering the Dutch labor market for the first time.

Table 2 shows that the least qualified are most likely to experience a transition from employment into unemployment or inactivity (see Model 1). For instance, the likelihood of becoming unemployed (in the following month) for tertiary educated male workers is 46% smaller than for men with primary education only ($1 - e^{-0.62} = 0.46$). With regard to the transition from employment to inactivity, this percentage is even higher: 68%. Furthermore, Model 1 displays that employment duration has a negative effect on the likelihood of becoming unemployed or inactive. Workers who are employed for a long period of time are less likely to become unemployed or inactive than those who are employed for a short period of time. In addition, more experienced workers (measured by their age) run a smaller risk of getting unemployed or inactive than less experienced ones, although the protective role of work experience decreases over the life-course of workers (indicated by the positive coefficient for the quadratic term of the age variable). Finally, Model 1 shows that changes in the oversupply of high educated and changes in the unemployment rate both have a positive effect on the likelihood of becoming unemployed. If, for example, the oversupply of high educated increases with 1.7% between two successive years – that is, the average growth rate in the period of observation – the probability of getting unemployed in the following month increases by 15% ($e^{1.7 \times 0.08} = 1.15$).

Model 2 reveals that the positive effects of changes in the oversupply of high educated on the transition rate from employment into unemployment or inactivity particularly hold true for lower educated male workers. For entry into unemployment, the effect is strongest for men with a qualification level in lower secondary education. For entry into inactivity, the impact is largest for men with primary education at most. These findings support the prediction based on the structural crowding out hypothesis that the employment opportunities of in particular the least qualified would suffer from the (growth in) oversupply of high educated in the labor market.

In Model 3, it is observed that none of the included interaction terms between changes in the aggregate unemployment rate and the various educational categories are significant. This implies that there is no empirical evidence for cyclical crowding out among low-skilled workers in the Netherlands with regard to employment outflow.

Model 4, finally, displays that the education-specific effects of changes in the oversupply of high educated on the transition to unemployment or inactivity remain intact when controlled for possible education-specific effects of alterations in the aggregate unemployment rate. Once again, this result indicates that with regard to the worker outflow only structural (and no cyclical) crowding out takes place among low-skilled workers in the Dutch labor market.

In Table 3, the parameter estimates are presented for the analysis of the transition from unemployment to re-employment and the one from inactivity to re-employment. Model 1 first of all demonstrates duration dependence. Men who are unemployed or inactive for a long period of time have a smaller likelihood of re-entering employment than those who are unemployed or inactive for a short period of time. Second, age has a positive effect on the transition from unemployment to re-employment. Men with a lot of work experience

Table 2
Coefficients of discrete-time competing risk event history models of exit out of employment into unemployment or inactivity for men (logit effects).

	M1	M2	M3	M4
Transition from employment into unemployment				
Intercept	−4.75**	−4.53**	−4.75**	−4.53**
Primary education	Ref.	Ref.	Ref.	Ref.
Lower secondary education	−0.36**	−0.68**	−0.36**	−0.68**
Higher secondary education	−0.63**	−0.86**	−0.64**	−0.86**
Tertiary education	−0.62**	−0.85**	−0.63**	−0.85**
Duration	−0.01**	−0.01**	−0.01**	−0.01**
Age	−0.63**	−0.62**	−0.63**	−0.62**
Age^2	0.09*	0.09**	0.09**	0.09*
Oversupply high educated (Δ)	0.08**	−0.02	0.08**	−0.03
Unemployment rate (Δ)	0.02*	0.02*	0.02	0.03
Oversupply high educated (Δ)*				
Lower secondary education		0.15*		0.16*
Higher secondary education		0.10		0.10
Tertiary education		0.10		0.10
Unemployment rate (Δ)*				
Lower secondary education			−0.01	−0.02
Higher secondary education			0.02	0.01
Tertiary education			0.01	−0.00
Transition from employment into inactivity				
Intercept	−5.78**	−6.02**	−5.78**	−6.02*
Primary education	Ref.	Ref.	Ref.	Ref.
Lower secondary education	−0.93**	−0.51~	−0.94**	−0.49~
Higher secondary education	−0.62**	−0.33	−0.62**	−0.35
Tertiary education	−1.15**	−0.96**	−−1.14**	−0.97**
Duration	−0.01**	−0.01**	−0.01**	−0.01**
Age	−1.87**	−1.88**	−1.87**	−1.87**
Age^2	0.51**	0.52**	0.51**	0.51**
Oversupply high educated (Δ)	0.04	0.15*	0.05	0.16*
Unemployment rate (Δ)	0.01	0.02	0.01	0.00
Oversupply high educated (Δ)*				
Lower secondary education		−0.22*		−0.25*
Higher secondary education		−0.13		−0.13
Tertiary education		−0.07		−0.07
Unemployment rate (Δ)*				
Lower secondary education			0.04	0.06
Higher secondary education			−0.01	−0.00
Tertiary education			−0.03	−0.02
Model chi^2	468**	478**	471**	482**
Df	16	22	22	28
#transitions from employment into unemployment	744	744	744	744
#transitions from employment into inactivity	204	204	204	204
N	426,807	426,807	426,807	426,807

Source: OSA Labor Supply Panel, 1985–2004.
~ $p < 0.10$.
* $p < 0.05$.
** $p < 0.01$.

are more likely to re-gain employment after a period of unemployment than those with little experience in the labor market. However, the positive age effect is declining over the working career of men. Third, the oversupply of high educated has a negative effect on the likelihood of experiencing a transition from unemployment to re-employment. The higher the growth in the oversupply of high educated, the less likely it is that unemployed men re-enter employment. Fourth, and finally, it is found that the unemployment growth rate has a negative effect on the likelihood of re-entering employment after a period of unemployment. The higher the increase in the unemployment rate, the lower is the probability of re-gaining employment.

Table 3
Coefficients of discrete-time event history models of re-entry into employment from unemployment or inactivity for men (logit effects).

	M1	M2	M3	M4
Transition from unemployment into re-employment				
Intercept	−2.71**	−2.48**	−2.71**	−2.48**
Primary education	Ref.	Ref.	Ref.	Ref.
Lower secondary education	0.04	−0.34~	0.04	−0.35×
Higher secondary education	−0.01	−0.18	−0.01	−0.18
Tertiary education	0.10	−0.23	0.10	0.23
Duration	−0.02**	−0.02**	−0.02**	−0.02**
Age	0.45*	0.48*	0.45*	0.48*
Age^2	−0.17**	−0.17**	−0.17**	−0.17**
Oversupply high educated (Δ)	−0.06*	−0.19**	−0.06*	−0.19**
Unemployment rate (Δ)	−0.03~	−0.03*	−0.02	−0.02
Oversupply high educated (Δ)*				
Lower secondary education		0.20*		0.20*
Higher secondary education		0.09		0.09
Tertiary education		0.17~		0.17~
Unemployment rate (Δ)*				
Lower secondary education			−0.01	−0.02
Higher secondary education			−0.00	−0.01
Tertiary education			−0.00	−0.01
Model chi^2	77**	84**	77**	84**
Df	8	11	11	14
#transitions from unemployment into re-employment	490	490	490	490
N	10,152	10,152	10,152	10,152
Transition from inactivity into re-employment				
Intercept	−2.89**	−2.62**	−2.90**	−2.65**
Primary education	Ref.	Ref.	Ref.	Ref.
Lower secondary education	−0.30	−0.34	−0.30	−0.31
Higher secondary education	0.43	0.24	0.43	0.24
Tertiary education	0.53	−0.05	0.46	−0.03
Duration	−0.02*	−0.03*	−0.02*	−0.03*
Age	−0.16	−0.15	−0.13	−0.13
Age^2	−0.19	−0.20	−0.20	−0.21
Oversupply high educated (Δ)	−0.08	−0.20	−0.08	−0.20
Unemployment rate (Δ)	−0.00	−0.01	−0.08	−0.08
Oversupply high educated (Δ)*				
Lower secondary education		−0.04		−0.05
Higher secondary education		0.09		0.10
Tertiary education		0.40		0.35
Unemployment rate (Δ)*				
Lower secondary education			0.06	0.07
Higher secondary education			0.03	0.03
Tertiary education			0.21	0.18
Model chi^2	77**	81**	80**	83**
Df	8	11	11	14
#transitions from inactivity into re-employment	49	49	49	49
N	7228	7228	7228	7228

Source: OSA Labor Supply Panel, 1985–2004.
~ $p<0.10$.
* $p<0.05$.
** $p<0.01$.

According to the estimates given in Model 2, there is evidence of the expected stronger negative effect of the oversupply of high educated on the transition from unemployment into re-employment for the low educated. For unemployed men with primary education at most, the estimate is −0.19, whereas for lower secondary, higher secondary and tertiary educated unemployed men, the coefficients are 0.01 (−0.19 + 0.20), −0.10

(−0.19 + 0.09) and −0.02 (−0.19 + 0.17), respectively. This finding is once more a confirmation of the structural crowding out hypothesis. A strong increase in the oversupply of high educated leads to less opportunities to re-enter employment after a period of unemployment, but especially for unemployed low educated men.

There is no indication that the strength of business cycle effects differs between educational categories. None of the included interaction terms between level of education and the unemployment growth rate in Models 3 and 4 are significantly deviating from the value zero. This suggests the absence of cyclical crowding out among low-skilled non-working men in the Netherlands with regard their chance of re-entering employment.

5. Summary and conclusions

The aim of this article was to investigate the deteriorated labor market position of low educated men in the Netherlands since the 1980s. In particular, it was determined whether they have been displaced from their jobs by higher educated workers. This process of crowding out can occur at both the worker inflow (first entry, re-entry into employment) and worker outflow (exit out of employment) and it can be both structural and cyclical. Crowding out at the worker inflow implies that a deterioration of the labor market situation reduces the (re-)entry probabilities of low educated individuals more so than those of higher educated ones. Crowding out at the worker outflow suggests that a worsening of the labor market situation increases the employment exit risk of low educated individuals more so than that risk of higher educated ones. Structural crowding out refers to the development that the upgrading of occupations cannot compensate the educational expansion. As a consequence, the higher educated who no longer have access to the best positions, will try to find a job further down the job queue, thereby replacing the low educated to ever lower-skilled jobs and non-employment (that is, unemployment and inactivity). Cyclical crowding out, finally, indicates that the employment opportunities of low educated individuals are particularly vulnerable under adverse economic circumstances, but that their ever lower employment rate returns to its original level when the economy peaks again. In fact, high educated workers only temporarily accept a lower-skilled job (instead of staying unemployed) and continue searching for a better fitting one. As soon as they find a suitable job, they do not longer displace the low educated from their jobs, improving the employment opportunities of the latter.

The results of the empirical analysis indeed suggest that crowding out occurs among low educated men in the Netherlands. The effects of crowding out are detected at both the worker in- and outflow. The source of these crowding out effects is purely of a structural nature. First of all, it was observed that a growth in the oversupply of high educated increases the employment exit risk of low educated workers more so than that of higher educated ones. Second, it was shown that an increase in the oversupply of high educated especially reduces the re-employment chances of low educated unemployed men.

There was no evidence found for cyclical crowding out effects in the Dutch labor market. This conclusion does not only contest some earlier research findings for the Netherlands in which cyclical crowding out was observed (Teulings & Koopmanschap, 1989; van Ours and Ridder, 1995), but also contrasts the descriptive results presented in this article that seem to suggest rather strong business cycle effects in (education-specific) employment patterns. Further research should shed more light on these seemingly contradictory findings. A possible explanation for the fact that earlier studies did find cyclical crowding out effects in the Dutch labor market is that in this research a very specific period (that is, the [early] 1980s) was investigated, when unemployment was very high. For such a specific and short time span, it is very difficult to distinguish cyclical crowding out effects from structural ones.

The results presented in this article imply that existing policy interventions aimed at improving the employment opportunities of workers at the lower end of the labor market (job creation schemes, wage subsidies and (re-)training initiatives) are not sufficient for them to find and keep a job. In addition to these policy measures, more jobs at the upper end of the labor market need to be created in order to cater for the oversupply of high educated. This would not only reduce the risk of higher educated workers to be overqualified for their employment, but also prevent them from displacing the low educated from their jobs.

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